

Amendment to the Claims:

1. (Cancelled)

2. (Currently Amended) An MR method ~~as claimed in claim 1,~~
wherein, ~~in step a) of the method,~~ for generating an MR image of an object situated in
an examination volume of an MR apparatus, which method has the following steps:

5 a) acquisition of a plurality of echo signals having at least two
different echo-time values, the echo signals being generated from high-frequency
pulses and magnetic-field gradient pulses by means of an imaging sequence, the
acquisition of the echo signals takes place by non-Cartesian, and in particular radial,
sampling of the spatial frequency space associated with the examination volume;

10 b) reconstruction from the corresponding echo signals of one
intermediate MR image for each echo-time value;

c) determination of local relaxation times and/or local frequency shifts
by analyzing the intermediate MR images while taking account of the respective
echo-time values;

15 d) reconstruction of a definitive MR image from the echo signals in
their entirety.

3. (Currently Amended) ~~[[An]]~~ The MR method as claimed in claim
2, wherein the intermediate MR images are reconstructed at a lower resolution than
the definitive MR image.

4. (Currently Amended) ~~[[An]]~~ The MR method as claimed in claim
~~[[1]]~~ 2, wherein the imaging sequence is an echo planar imaging sequence.

5. (Currently Amended) An MR method ~~as claimed in claim 1,~~
~~wherein the local relaxation times and/or local frequency shifts that are determined~~
~~are used to~~ for generating an MR image of an object situated in an examination
volume of an MR apparatus, which method has the following steps:

a) acquisition of a plurality of echo signals having at least two different echo-time values, the echo signals being generated from high-frequency pulses and magnetic-field gradient pulses by means of an imaging sequence;

5 b) reconstruction from the corresponding echo signals of one intermediate MR image for each echo-time value;

c) determination of local relaxation times and/or local frequency shifts by analyzing the intermediate MR images while taking account of the respective echo-time value;.

10 d) correcting image artifacts caused by relaxation phenomena and/or field inhomogeneities in the definitive MR image using the determined local relaxation times and local frequency shifts; and

e) reconstruction of a definitive MR image from the echo signals in their entirety.

6. (Currently Amended) ~~[[An]]~~ The MR method ~~in-particular~~ as claimed in claim 5, wherein the values of local relaxation times and values of local frequency shifts ($\Delta\omega(x)$) that are determined are used to correct image artifacts caused by relaxation phenomena and field inhomogeneities in ~~[[an]]~~ the MR image, with a
5 complex-variable local frequency shift ($\Delta\omega'(x)$) in accordance with ~~the formula being used as a basis:~~

$$\Delta\omega'(x) = \Delta\omega(x) - \frac{i}{T_2^*(x)}.$$

7. (Currently Amended) ~~An MR method as claimed in claim 1,~~
~~wherein~~ for generating an MR image of an object situated in an examination volume of an MR apparatus, which method has the following steps:

5 a) acquisition of a plurality of echo signals having at least two different echo-time values, the echo signals being generated from high-frequency pulses and magnetic-field gradient pulses by an imaging sequence;

b) reconstruction from the corresponding echo signals of an intermediate MR image for each echo-time value;

- c) determination of local relaxation times and/or local frequency shifts
10 by analyzing the intermediate MR images while taking account of the respective
echo-time values;
- d) reconstruction of a definitive MR image from the echo signals in
their entirety;
- e) correction of image artifacts caused by relaxation phenomena and/or
15 field inhomogeneities in the definitive MR image based on the determined local
relaxation time and/or local frequency shifts; and
- f) superimposition of a representation of the local relaxation times is
~~superimposed~~ on a representation of the definitive MR image for the purposes of
display.

8. (Currently Amended) An MR apparatus having a main field coil
for generating a homogeneous static magnetic field in an examination volume, a
plurality of gradient coils for generating magnetic field gradients in the examination
volume, at least one high-frequency coil for generating high-frequency fields in the
5 examination volume and for receiving echo signals from the examination volume, and
a central control unit for operating the gradient coils and the high-frequency coil, plus
a reconstruction and display unit for processing and showing the echo signals,
wherein the central control unit and the reconstruction and display unit have a
programmed control means that operates by the method claimed in claim [[1]] 2.

9. (Cancelled)

10. (New) A computer medium which, when loaded into a
computing device, controls the computing device to perform the method as claimed in
claim 2.

11. (New) The MR method as claimed in claim 5, wherein in
step a) of the method, the acquisition of the echo signals takes place by radial
sampling of the spatial frequency space associated with the examination region.

12. (New) The MR method as claimed in claim 5, wherein the intermediate MR images are reconstructed at a lower resolution than the definitive MR image.

13. (New) The MR method as claimed in claim 5, wherein the imaging sequence is an echo planar imaging sequence.

14. (New) An MR apparatus having a main field coil for generating a homogeneous static magnetic field in an examination volume, a plurality of gradient coils for generating magnetic field gradients in the examination volume, at least one high-frequency coil for generating high-frequency fields in the examination volume and for receiving echo signals from the examination volume, and a central control unit for operating the gradient coils and the high-frequency coil, plus a reconstruction and display unit for processing and showing the echo signals, wherein the central control unit and the reconstruction and display unit have a programmed control means that operates by the method claimed in claim 5.

15. (New) A computer medium which, when loaded into a computing device, controls the computing device to perform the method as claimed in claim 5.

16. (New) The MR method as claimed in claim 7, wherein in step a) of the method, the acquisition of the echo signals takes place by radial sampling of the spatial frequency space associated with the examination region.

17. (New) The MR method as claimed in claim 7, wherein the intermediate MR images are reconstructed at a lower resolution than the definitive MR image.

18. (New) The MR method as claimed in claim 7, wherein the imaging sequence is an echo planar imaging sequence.

19. (New) The MR method as claimed in claim 7, wherein the values of the local relaxation times ($T_2^*(x)$) and the values of local frequency shifts ($\Delta\omega(x)$) are used to correct image artifacts caused by relaxation phenomena and field images in the definitive MR image with a complex-variable local frequency shift
5 ($\Delta\omega'(x)$) in accordance with:

$$\Delta\omega'(x) = \Delta\omega(x) - \frac{i}{T_2^*(x)}.$$

20. (New) An MR apparatus having a main field coil for generating a homogeneous static magnetic field in an examination volume, a plurality of gradient coils for generating magnetic field gradients in the examination volume, at least one high-frequency coil for generating high-frequency fields in the examination
5 volume and for receiving echo signals from the examination volume, and a central control unit for operating the gradient coils and the high-frequency coil, plus a reconstruction and display unit for processing and showing the echo signals, wherein the central control unit and the reconstruction and display unit have a programmed control means that operates by the method claimed in claim 7.

21. (New) A computer medium which, when loaded into a computing device, controls the computing device to perform the method as claimed in claim 7.

22. (New) The MR method as claimed in claim 2, wherein the local relaxation times and/or local frequency shifts that are determined are used to correct image artifacts caused by relaxation phenomena and/or field inhomogeneities in the definitive MR image.